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ABSTRACT

Expectations of college seniors and their goal achievements after graduation were investigated. Also considered were: alumnae evaluations of the relationship of their college preparation to goal achievements; a comparison of career goals and decision-making at the time of the senior year and after graduation; whether alumnae use abilities learned in college on the job; and whether alumnae continue learning and if self-sustained learning is evident at work. Subjects consisted of 56 alumnae of a women's college who graduated in 1978, and 63 seniors from the 1980 graduating class. Both groups completed parallel forms of a questionnaire in spring 1980. Interviews with the 1978 graduates, administered when they were still in their senior year, were also compared to interviews conducted 2 years after graduation. It was found that seniors had higher career expectations than the alumnae were able to realize after 2 years, but the more experienced alumnae felt better prepared by their education than seniors did when they graduated. Both alumnae and seniors felt good about their achievements and the value of college in preparing them to meet their goals. Intellectual and interpersonal abilities are both mentioned as necessary for coping successfully with a range of situations. Student comments are included. (SW)

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EVALUATING COLLEGE OUTCOMES THROUGH ALUMNAE STUDIES:

MEASURING POST-COLLEGE LEARNING AND ABILITIES

Laura Giencke-Holl Marcia Mentkowski
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Office of Research & Evaluation
ALVERNO COLLEGE

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An overview and rationale for our approach to the study of college outcomes, and a summary of the results from the following series of ten research reports, are found in:

Marcia Mentkowski and Austin Doherty. Careering After College: Establishing the Validity of Abilities Learned in College for Later Careering and Professional Performance. Final Report to the National Institute of Education: Overview and Summary. Milwaukee, WI: Alverno Productions, 1983; revised 1984. (ERIC Document Reproduction Service No. ED 239 556.)

Research Reports:

One: Friedman, M., Mentkowski, M., Earley, M., Loacker, G., & Diez, M. Validating Assessment Techniques in an Outcome-Centered Liberal Arts Curriculum: Valuing and Communications Generic Instrument, 1980. (ERIC Document Reproduction Service No. ED 239 557.)

Two: Friedman, M., Mentkowski, M., Deutsch, B., Shovar, M.N., & Allen, Z. Validating Assessment Techniques in an Outcome-Centered Liberal Arts Curriculum: Social Interaction Generic Instrument, 1982. (ERIC Document Reproduction Service No. ED 239 558.)

Three: Assessment Committee/Office of Research and Evaluation. Validating Assessment Techniques in an Outcome-Centered Liberal Arts Curriculum: Insights From the Evaluation and Revision Process, 1980. (ERIC Document Reproduction Service No. ED 239 559.)

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Five: Assessment Committee/Office of Research and Evaluation. Validating Assessment Techniques in an Outcome-Centered Liberal Arts Curriculum: Six Performance Characteristics Rating, 1983. (ERIC Document Reproduction Service No. ED 239 561.)

Six: Mentkowski, M., & Strait, M. A Longitudinal Study of Student Change in Cognitive Development, Learning Style, and Generic Abilities in an Outcome-Centered Liberal Arts Curriculum, 1983. (ERIC Document Reproduction Service No. ED 239 562.)

Seven: Much, N., & Mentkowski, M. Student Perspectives on Liberal Learning at Alverno College: Justifying Learning as Relevant to Performance in Personal and Professional Roles, 1982. (ERIC Document Reproduction Service No. ED 239 563.)

Eight: Mentkowski, M., Much, N., & Giencke-Holl, L. Careering After College: Perspectives of Lifelong Learning and Career Development, 1983. (ERIC Document Reproduction Service No. ED 239 564.)

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Ten: Mentkowski, M., O'Brien, K., McEachern, W., & Fowler, D. Developing a Professional Competence Model for Management Education, 1982. (ERIC Document Reproduction Service No. ED 239 566.)

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Evaluating College Outcomes Through Alumnae Studies: Measuring Post-College Learning and Abilities[1]

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This study examines possibilities for broadening the study of alumnae outcomes of college to include learning processes and complex abilities, in order to better validate and improve college programs. Researchers, in efforts to establish the validity of college outcomes, have typically used the more available but often static indicators to study alumnae, such as occupational level, salary, graduate school enrollment, job satisfaction, personal achievements, and value of college preparation. Pace (1979) and others have suggested that researchers go beyond these commonly used indicators, and corresponding questionnaire measures of college outcomes (e.g., NCHEMS, 1979), to include measures of knowledge, continued learning, and quality of societal contribution. Such a research agenda has several implications.

One implication is that colleges and universities will need to study their alumnae in more concentrated ways. First, more complete research designs are needed. Cross-sectional designs that compare alumnae with seniors help to control for student idealism and alumnae nostalgia. Concurrent longitudinal designs enable a look at the development of outcomes throughout college, and then examine them further as alumnae refine, adapt and expand them in new learning after college. Second, new instruments that measure broad outcomes are needed. But these are difficult to develop without a more intensive look at how alumnae apply knowledge, engage in new learning, and contribute to society than questionnaires provide.

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[1]Some of the findings reported in this paper are drawn from Mentkowski, Much and Giencke-Holl (1983), one of a series of studies (Mentkowski & Doherty, 1983) funded in part by the National Institute of Education (NIE-G-77-0058) to establish the validity of abilities learned in college for later careering and professional performance. Please direct correspondence to: Marcia Mentkowski, Ph.D., Professor and Director, Office of Research and Evaluation, Alverno College, 3401 South 39th Street, Milwaukee, WI 53215. Phone (414) 647-3811.

Another implication is that constructs measured by institutions should be effective indicators of the impact of curricula on post-college outcomes. If faculty are to use research results to improve curricula, it is important that these constructs reflect the way faculty at any one college defines its outcomes. Take, for example, "knowledge." In our view, knowledge is difficult to measure adequately in alumnae, because it is the use of knowledge that alumnae are most apt to demonstrate. Post-college "knowledge" is not comparable to knowledge measured by college achievement tests or GRE's. And suppose a liberal arts faculty defines knowledge as only one component of a learning goal. That makes it even more risky to assume a straight-line prediction of amount or type of knowledge gained in college to alumnae "knowledge," because a complex ability, of which knowledge is a part, may be refined and adapted by alumnae.

A second construct that needs careful definition for alumnae studies is "continued learning." Continued learning as measured by graduate school enrollment is limited in that it assumes learning only occurs in academic settings. Not all qualified seniors go on to graduate school, and today's graduates may postpone or reject it for economic reasons. Because learning on the job is essential to alumnae if they intend career advancement, self-sustained learning at work may be a critical variable. Defining continued learning as self-sustained learning, or learning to learn, is a more appealing definition to educators, and becoming an active, self-directed learner has received strong support as a learning goal in college and afterwards (Study Group on the Conditions of Excellence in American Higher Education, 1984).

Finally, let's take the example of "societal contribution." Indicators such as high-level involvement in civic agencies or cultural activities are typically used. But do such static indicators reflect an alumna's more indirect influence in community change, in managing a career and a family, or in life planning and decision-making that results in competent, but often unrecognized, contributions to work and family life? A faculty expects that societal contributions will show up in the more traditional indicators such as board chairperson of the symphony or trustee for a foundation, but that comparable contributions are also reflected in childrearing, and in traditional occupations which are less likely to lead to financial success and community prominence.

In sum, difficulties in definition and measurement face us. And if researchers intend to measure the college's impact on alumnae outcomes, we need to pay close attention to how a college faculty actually defines "knowledge," "continued learning" and "societal contribution." It seems inappropriate to measure outcomes not considered by faculty as representative of their learning goals, and toward which they are not about to change their teaching or their curriculum.

We began our study of alumnae outcomes with one faculty's definitions. Alverno College is a Midwestern liberal arts college for women with about 1500 degree students in both weekday and weekend time frames. Alverno, which has focused for a century on preparing women for professional careers, formally adopted an outcome-centered, ability-based approach to its curriculum in 1973, accrediting students for progressive demonstration of certain broad abilities in all subject areas. The Alverno College faculty defines knowledge and its use in terms of complex intellectual and interpersonal abilities all students

must demonstrate in order to graduate: Communication, Analysis, Problem Solving, Valuing, Social Interaction, Taking Responsibility for the Environment, Involvement in the Contemporary World, and Aesthetic Response (Alverno College, Faculty, 1976).

The Alverno faculty is also calling for broader constructs for the study of alumnae outcomes that reflect faculty goals for students. The faculty expects students to use the intellectual and interpersonal abilities within and across their work in the disciplines, and in sponsored off-campus learning settings. Which of these abilities--that incorporates knowledge and its use--can be identified in alumnae descriptions of work experience? As educators, they want to know how abilities develop after college, so they can better foster them in college. The faculty also expects that students become active, self-sustained learners who leave college able to learn on their own. The faculty believes that adapting to careers of the future calls for more complex learning abilities, and it questions how this new learning happens. What components of continued learning, or self-sustained learning, describe learning after college?

The Alverno faculty also recognizes that students come to college with strong values for economic and career advancement (Astin, 1984). Alverno students typically work before, during and after college. But the faculty expects students will learn to set career goals and engage in more sophisticated decision-making that will prepare them for future career and professional development. These educators want to know how alumnae think about their career goals when they begin their post-college work, and how career decision-making is influenced by their actual work experience. How do alumnae describe current career goals and decision-making? Because Alverno students are women, the faculty expects that alumnae "societal contributions" will emerge initially in career activities. At the same time, the faculty is interested to know whether alumnae achieved the goals that are important to them. They want alumnae to evaluate college preparation relative to what alumnae feel they have achieved.

We argued earlier that we need to employ more complete designs, create better measuring tools, and define constructs in ways that reflect the faculty's definitions. In 1976, we met the need for comprehensive designs by initiating a set of studies of student outcomes incorporating cross-sectional and longitudinal designs (Mentkowski & Doherty, 1983 Revised 1984). We then questioned how to begin to measure the broad abilities alumnae use, how they learn, and their career goals and decision-making after college in ways that illuminate these constructs for Alverno faculty. An ideal way might be to administer faculty measures of senior performance to alumnae. While the faculty have designed and implemented a complex assessment process (Alverno College Faculty, 1979) to measure the eight abilities and how they are used in off-campus settings, having alumnae complete the same sets of complex assessments (projects, simulations, etc.) they completed as seniors is not feasible as an initial strategy for defining constructs. Rather, it seemed we needed a broad, cross-disciplinary measure to tap these constructs as they would appear in alumnae.

As part of our program evaluation design, we did use such a broad measure of students abilities, learning, and goal orientation. We conducted longitudinal studies of students (Mentkowski & Doherty, 1983 Revised 1984) using an in-depth, confidential interview administered at the end of each year

in college. These studies provided an initial picture of abilities and learning as they might appear in student's perceptions. Results (Much & Mentkowski, 1982) showed that students use their abilities (those explicitly defined by the faculty) in classes, in campus and personal life, and in sponsored off-campus learning. Students also experience learning as a continuous process of experiencing, reflecting, forming new concepts, and testing one's judgment and abilities in action. Further, students also develop more sophisticated orientations to their career goals and decision-making. These results gave us some initial confidence that evidence for college outcomes does show up in an interview.

We reasoned that a first step toward broadening our measurement of alumnae outcomes was to have alumnae complete a similar interview, and to accompany the interview with a more traditional questionnaire. An open-ended interview, administered by a trained interviewer who used extensive probes, would likely elicit data that would enable a content analyst to infer and then describe, the complex processes used by alumnae to continue learning. Categories of abilities that alumnae perceived themselves to be using at work, as well as their career goals and decision-making, should also emerge. The accompanying questionnaire could obtain factual information on the more static measures of college outcomes and provide a way for alumnae to evaluate college preparation relative to their achievements. Further, information on which outcomes the alumnae attribute to college preparation is a check on researchers' selection of variables expected to be of interest to educators engaged in refining the curriculum.

The study has two broad goals: The first is to evaluate alumnae goal achievement relative to college preparation, to describe career goals and decision-making, and to examine post-college learning and abilities in ways that will improve curricula. The second is to generate a data base on these more complex college outcomes that will suggest more valid and effective constructs and measures.

Research Questions

The research questions are:

1. Are senior expectations and goal achievements confirmed by the post-college experiences and achievements of alumnae? How do alumnae evaluations of college preparation relate to their goal achievements?

2. How do the career goals and decision-making of alumnae compare to their career goals and decision-making when they were seniors?

3. Do alumnae use abilities learned in college on the job?

4. Do alumnae continue learning, and how is self-sustained learning evident at work?

METHOD

Participants

Alumnae. All 63 two-year alumnae from a women's college who graduated from an outcome-centered curriculum in 1978 were mailed a questionnaire in 1980, and 56 responded, for an 89% participation rate. Thirty-two of the 37 of these alumnae who were interviewed in 1978 as seniors, as part of a longitudinal study, were interviewed again in 1980. The alumnae ranged in age from 23 to 52 years.

Seniors. All 68 seniors from the 1980 graduating class were invited to participate, and 63 completed the questionnaire for a 93% participation rate. The senior group ranged in age from 21 to 55 years.

Design

This study is part of a triangulated design (Mentkowski & Doherty, 1983, 1983 Revised 1984) where interrelated studies of students, alumnae and professionals carried out over seven years seek to establish the validity of abilities learned in college for later careering and professional performance (Mentkowski & Doherty, 1983; Mentkowski, Much & Giencke-Holl, 1983). Selected data from this design was analyzed to research the questions of this study and the comparisons are illustrated below. To answer the research questions comparing alumnae (1978 seniors) with current (1980) seniors, participants completed parallel forms of the questionnaire in Spring, 1980. To answer the longitudinal research questions, interviews from graduating seniors in 1978 were compared to two-year alumnae interviews from 1980.

	Year of Data Collection	
	1978	1980
Class of 1978	interview	interview questionnaire
Class of 1980		questionnaire

Instruments

Questionnaire. To enable a cross-sectional comparison of graduating senior expectations with alumnae achievements, we created a 73 item Alverno College Alumna Careering Questionnaire (Mentkowski & Bishop, 1980). The questionnaire measured variables identified by Pace (1979), to provide quantifiable data on work and career, job expectations and satisfactions, continued education planned or achieved, and civic involvement. To relate goal achievements to college preparation, alumnae were asked to rate 37 educational, career and personal goals on four goal related variables (goal importance in college, goal importance now, goal preparation from Alverno, and goal achievement). Subgroups of these 37 goal items were used to create four global indexes (see Appendix A). A parallel 79 item form simultaneously surveyed graduating seniors for similar information except seniors were asked to

anticipate job satisfactions, etc. where appropriate (Mentkowski & Bishop, 1981).

Interview. To describe alumnae career goals and decision-making, to study how abilities learned in college were used by alumnae, and to identify components of learning on the job, alumnae who had been interviewed with the Student Perspectives Interview (Mentkowski & Much, 1980b) at graduation were invited on campus for another in-depth, semi-structured Alumna Perspectives Interview (Mentkowski & Much, 1980a). The two to three hour interviews were audiotaped with the participant's permission. The interview was conducted by a trained interviewer, and guided by a protocol of 26 questions with probes.

The following questions are examples of those in the Alumna Perspectives Interview:

5. Have you started new work since you graduated?
   If yes: Do you think you had to do any learning when you started the work you do now?
   What kinds of things did you have to learn? Why those?
   What do you think are the most important kinds of abilities you needed for making the change to new kinds of work or to your new job? Why do you think those are important?

6. In college, students are, to different degrees, focused on learning as a major part of what they do. To what degree do you think you were focused on learning while you were in college? In what ways is learning still a part of what you do? (Describe with examples.)
   Do you find that how you learn is different in various settings (e.g., work situations, home, and social situations)? How is learning different? (Describe with examples.)

8. Do you think that any of the learning experiences you had at Alverno contributed to the learning you are doing now? In what ways? Could you give me some examples?

15. Do you feel competent at this time in your life?
    Which of your abilities do you value most? Why these?

17. Have there been any times during your transition from school to your current occupational activities that you found particularly problematic, difficult or stressful?
    Has this been resolved as yet?
    Do you think there is anything you learned in college that helped you resolve that? If so, what? How?

18. What do you think it takes for a person to make the transition from college to life after college?
    What abilities do you think are most important?

Data Analyses

Questionnaire. Alumnae and graduates' questionnaire responses were statistically compared with t-tests. Pearson correlations were used to

describe the relationship among questionnaire measures. Created indexes (see Appendix A) were checked for reliability with Cronbach's alpha.

Interview. The audiotaped interviews were transcribed to facilitate a content analysis. An experienced content analyst first selected, for further analysis, all portions of the transcripts which were relevant to the research questions. First-level inferences were then made, and descriptive categories, representing the total range of perceptions, were established. The interviews were reread at this point to ensure that the order of the initial reading of interviews had not limited the range of inferences drawn. Finally, generalizations emerged which were representative of the range of participant perceptions. This process is similar to that which Marx (1963) describes as the "functional mode of theory construction," a process of moving from the generalization level to the data level and back again, constantly testing and revising generalizations in the light of empirical findings.

RESULTS AND DISCUSSION

Senior Expectations and Alumnae Experiences

Work, Learning and College Preparation. Data generated by the cross-sectional study using the careering questionnaire compared senior expectations with two-year alumnae realizations. Seniors almost uniformly expected to work after college. Ninety-six percent of these women alumnae sought employment, 92% succeeded and 89% found positions related to their major. Seniors showed higher career expectations than alumnae were able to realize in two years, but alumnae rated aspects of satisfaction with their first positions and potential for advancement as above average (see Table 1). Potential for advancement to a higher position from the one held was positively associated with career satisfaction $r = .37$, $p < .01$) and perhaps also with satisfaction with one's college major $r = .21$, $p < .07$).

Alumnae show more positive attitudes toward college preparation after two years, but both groups rated college experience as above average (see Table 2). Forty-one percent of the alumnae reported additional schooling and 56% indicated they intended to go on to school in the future. Whereas 53% of the alumnae were married, only 19% of the seniors were married.

Senior and Alumnae Achievements. An additional series of 37 items on both the senior questionnaire and the alumnae questionnaire elicited multiple responses from the participants, including the degree to which the items represented an important goal for them now, the degree to which the item represented something they have achieved, and the degree to which the item represented something that Alverno prepared them for. For each of these 37 items, responses of achievement and goal importance were used to create an estimate of the degree to which the item represented a valued goal achievement for the individual participant. If the participant indicated that they achieved the goal and that it was very important, the item was assigned a value of 3. If the participant indicated that they achieved the goal, but that it was only moderately important to them, the item was assigned a value of 2. The item was also assigned a value of 2 when the goal was only somewhat achieved, but it was a very important goal to them. If the goal was somewhat achieved and the goal was moderately important, the item was assigned a value of 1. If

either the item was not achieved or the goal was unimportant, the item was assigned the value of 0.

Once this measure of valued goal achievement was created for each of these 37 items, four indexes were created by summing subgroups of items. The indexes of valued goal achievement were Civic and Cultural Participation, Economic and Career Advancement, Interpersonal Abilities, and Learning to Learn/Intellectual Abilities. The subgroups of items that make up each of these indexes of valued goal achievement are listed in Appendix A. Valued goal achievement in gaining knowledge and understanding in an academic field was measured by a single item from the group of 37 items.

Participants' responses concerning the degree to which Alverno prepared them for each of the 37 items were used to create four indexes of preparation by Alverno that correspond to the four valued goal achievement indexes. Thus, the subgrouping of items in Appendix A also represent the items that make up these four indexes of goal preparation by Alverno.

In order to determine the split-half reliability of these indexes, Cronbach 's alpha was computed for the seniors and alumnae separately. For the seniors, the reliability coefficients on the valued goal achievement and preparation by Alverno indexes ranged from .74 to .82. For the alumnae, the reliability coefficients for these indexes ranged from .54 to .85. For the alumnae, the indexes with reliability coefficients lower than .70 were the index of valued goal achievement in Civic and Cultural Participation (.54), the index of valued goal achievement in Economic and Career Advancement (.62), and the index of preparation by Alverno in Economic and Career Advancement (.60). The reliability of these indexes all seem minimally adequate, although the valued goal achievement index for Civic and Cultural Participation seems somewhat less adequate for the alumnae.

In order to explore the relationship of these indexes with one another, the intercorrelation of the valued goal achievement indexes and the intercorrelations of the preparation by Alverno indexes were computed separately for the seniors and alumnae. For the seniors, the average intercorrelation of valued goal achievement indexes was $\underline{r} = .43$, and for the alumnae it was $\underline{r} = .50$. The average intercorrelation of the preparation by Alverno indexes was somewhat higher. For the seniors, the average intercorrelation of preparation by Alverno indexes was $\underline{r} = .66$, and for the alumnae it was $\underline{r} = .56$. Of the 24 intercorrelations, only one failed to reach statistical significance, namely the correlation between the valued goal achievement index of Economic and Career Advancement and the valued goal achievement index of Civic and Cultural Participation, $\underline{r} = .13$. In general, the valued goal achievement index of Economic and Career Advancement had relatively small associations with the other valued goal achievement indexes, with most $\underline{r}$ values ranging between .37 and .43, but its correlation with the Learning to Learn/Intellectual Abilities index was somewhat higher for the alumnae, $\underline{r} = .63$.

The relatively high correlations between these indexes might reflect the tendency for these constructs to be integrated with one another or it might reflect that the participants failed to discriminate appropriately among the items. One argument for the discriminant validity of the valued goal achievement indexes can be found in the correlations of these indexes with some additional questions asked earlier in the questionnaire. One set of questions

earlier in the questionnaire measured the participants' perception of potential for advancement in their first position after college, their perception of potential for this position to lead to career advancement, and their general satisfaction with their first position. For the seniors, a question measuring their expectations for finding a job after graduation served as an additional question in this separate set of questions about economic and career achievement. Another set of two questions earlier in the questionnaire measured the participants' motivational investment in educational achievement while at Alverno, and their "personal learning effort while at Alverno."

The valued goal achievement in Economic and Career Advancement index seemed to show discriminant validity for the seniors, but for the alumnae it failed even to show a statistically significant correlation with the earlier economic and career questions. Thus, for the seniors, the average correlation of the index of Economic and Career Advancement with the corresponding earlier convergent questions in the questionnaire was $\underline{r} = .32$ (2 out of 4 correlations were statistically significant with $\underline{p}$ values $< .001$) and the average correlation of the other divergent valued goal achievement indexes with these earlier questions was $\underline{r} = .18$ (4 out of 12 correlations were statistically significant). For the alumnae, however, the corresponding average correlations were $\underline{r} = .11$ and $\underline{r} = -.04$, respectively.

The valued goal achievement Learning to Learn/Intellectual Abilities index showed discriminant validity for both the seniors and alumnae. The average correlation of this index with the earlier convergent questions measuring motivation to learn while at Alverno was $\underline{r} = .31$ for the seniors and $\underline{r} = .34$ for the alumnae. In contrast, the average correlation of the divergent valued goal achievement indexes with these earlier motivation to learn questions was $\underline{r} = .16$ for the seniors, and $\underline{r} = .14$ for the alumnae. Thus, all four of the correlations of the valued goal achievement Learning to Learn/Intellectual Abilities index with the earlier convergent measures of motivation to learn were statistically significant, while the 12 correlations of the divergent indexes with the earlier measures of motivation to learn yielded only 2 statistically significant associations.

In sum, the index of valued goal achievement in Learning to Learn/ Intellectual Abilities not only showed reliability, but also discriminant validity. The discriminant validity of the index of Economic and Career Advancement as a valued goal achievement was supported only for the seniors. This index seemed less reliable for the alumnae, as did the index of valued goal achievement in Civic and Cultural Participation. Overall, however, the indexes demonstrated adequate reliability.

This evidence for the discriminant validity of the valued goal achievement index of Learning to Learn/Intellectual Abilities supports a more detailed analysis of the presumed theoretical integration of the constructs measured by these indexes. For both groups of participants and for both the valued goal achievement and preparation indexes, the correlation between the Learning to Learn/Intellectual Abilities index and the corresponding Interpersonal Abilities index tended to be among the strongest, with an average $\underline{r}$ value of .66. The second most consistently strong association between indexes was between the Interpersonal Abilities index and the corresponding index of Civic and Cultural Participation, with an average $\underline{r}$ value of .63.

It should be noted that the single item measure of valued goal achievement in understanding an academic field is generally not associated with the other indexes of valued goal achievement. It correlates only with the index of valued goal achievement in Interpersonal Abilities and only for the alumnae participants, $r = .30$, $p < .05$. In contrast, the single item measure of preparation by Alverno in understanding an academic field does tend to be associated with the indexes of preparation by Alverno. For the alumnae, preparation in academics is associated with the indexes of preparation in Interpersonal Abilities $r = .44$, $p < .001$) and preparation in Learning to Learn/Intellectual Abilities $r = .44$, $p < .001$). For the seniors, preparation in understanding academics is associated with all four preparation indexes--Interpersonal Abilities $r = .38$, $p < .01$); Learning to Learn/Intellectual Abilities $r = .28$, $p < .05$); Economic and Career Advancement $r = .46$, $p < .001$); and Civic and Cultural Participation $r = .20$, $p < .07$), although the latter only approached statistical significance.

College Preparation and Goal Achievement. Given our preliminary evidence supporting our measurement of the constructs that we claim for these indexes, we turned to the question of the impact of the Alverno College experience as it was perceived by the two-year alumnae. We examined this question of college impact by correlating our indexes of preparation by Alverno with our indexes of valued goal achievement. To round out these correlational analyses, we also correlated our single item measure of preparation in understanding an academic field with our single item measure of valued goal achievement in understanding an academic field. Of these five correlations, three were statistically significant.

The alumnae's perception of having been prepared by Alverno in Learning to Learn/Intellectual Abilities is strongly associated with their perception of having made valued achievement in Learning to Learn/Intellectual Abilities, $r = .56$, $p < .001$. The perception of having been prepared by Alverno in Interpersonal Abilities is also associated with the perception of having made valued achievement in Interpersonal Abilities, $r = .27$, $p < .05$, although the relationship does not appear to be as strong. In addition, the perception of having been prepared by Alverno in understanding an academic field is associated with the perception of having made valued achievement in understanding an academic field, $r = .40$, $p < .01$.

The statistically nonsignificant correlations are in a similar direction. Those perceiving that Alverno has prepared them for Economic and Career Advancement may be more likely to think that they have made valued achievement in Economic and Career Advancement, $r = .21$, $p < .10$, but the tendency does not approach conventional levels of significance. The correlation for the Civic and Cultural Participation indexes shows only an unreliably similar directional tendency, $r = .14$, $p > .17$.

It should be noted that the apparent lack of a reliable impact for the Economic and Career Advancement and Civic and Cultural Participation indexes may be related to the relative unreliability of these indexes for alumnae, which was noted above.

T-tests were employed to compare alumnae and seniors on each of the four valued goal achievement indexes and on each of the four preparation by Alverno indexes, as well as to compare alumnae and seniors on the measure of valued goal achievement in an academic field and on the measure of preparation by

Alverno in an academic field. Two of these eight t-tests reached statistical significance. Confirming the analysis of the earlier questions on the subject, seniors indicated a greater degree of valued achievement in Economic and Career Advancement, $\bar{M}$ = 15.14, than did alumnae, $\bar{M}$ = 13.04 $t(99) = 2.36$, $p < .05$). Seniors also perceived a greater degree of valued achievement in their knowledge and understanding of an academic field, $\bar{M}$ = 2.42, than did alumnae, $\bar{M}$ = 2.06 $t(110) = 2.41$, $p < .05$). Although only borderline statistical significance, it is interesting to note that the alumnae, nonetheless, may have perceived themselves to have more college preparation in Civic and Cultural Participation, $\bar{M}$ = 8.43, than did the seniors, $\bar{M}$ = 7.46 $t(102) = 1.71$, $p < .10$). There also may have been a trend for alumnae to perceive more valued achievement in Interpersonal Abilities, $\bar{M}$ = 22.02, than seniors, $\bar{M}$ = 20.48, but this difference was statistically unreliable $t(99) = 1.56$, $p < .13$). No other differences approached statistical significance, all p values $> .20$.

In general, both groups said they were achieving career and personal goals. Indeed, for all of the indexes of valued goal achievement and for the single item measure of academic understanding, this was clearly the case, with the lone exception perhaps of Civic and Cultural Participation. Fifty-three percent of the alumnae were married in contrast to 19% of the seniors. This new role may limit civic participation for two-year alumnae. What is of note here is that while some alumnae attitudes were more positive than those of seniors, and seniors had higher expectations of what they could accomplish in the job market than alumnae were able to realize in two years, alumnae are generally more alike the presumably less nostalgic seniors than they were different in their evaluations of college preparation and valued achievement. This suggests that educational, personal, and career goals important in college were confirmed by post-college experience (see also Mentkowski, Much & Giencke-Holl, 1983).

These results confirm those of other alumni studies cited by Pace (1979) which show that alumni generally show career satisfaction, although job success among Alverno graduates is higher than in the most comparable results Pace cites from the Associated Colleges of the Midwest study (Wishart & Rossmann, 1977). The other alumni studies also confirm that alumni feel college prepared them to achieve their goals, and view education as relevant to their jobs. Altogether, the results suggest that Alverno alumnae data are generalizable, and that further study of career decision-making, abilities, and learning through the interview will identify information that could be useful to other colleges as well.

Career Goals and Decision-Making

The cross-sectional comparison of graduating senior expectations with alumnae realizations revealed that 1980 seniors had higher expectations for what they could accomplish in their careers than alumnae, who had graduated in 1978, were able to realize in two years. To better understand the findings which emanated from the questionnaire analysis, an analysis of interview transcripts was undertaken with a focus on the transitional period from college to work.

Of the 63 students who graduated from Alverno in 1978, 37 were interviewed as seniors. Of the 37 women initially interviewed in 1978, 32 participated in follow-up interviews in 1980 as two-year alumnae. Thus, 32 pairs of interviews

were available for longitudinal analysis. The research question guiding this interview analysis was: How does the career and vocational orientation of two-year alumnae compare to the orientation these same women had as Alverno seniors?

The typical senior graduating from Alverno in 1978 was leaving Alverno with clear career goals. At the time of graduation, she was no longer preoccupied with questions such as "What am I going to be?" or "What will I do?" She knew. These questions had been addressed through two earlier and central decisions. First, she had chosen to study at Alverno with the knowledge that educating women for careers and vocations is central to the Alverno mission. Second she had chosen a major area of study which she viewed as preparatory to a specific vocation or profession. Through her many field experiences in her major area, she had many opportunities to reaffirm her choice of major and eventual career. From the vast array of possible futures, the woman graduating in 1978 had already chosen a particular future. She knew what she wanted to be. She saw herself as a woman who would be working and she had identified with a particular career (e.g., nursing, teaching, management, etc.). If there were any career questions at this time, they were likely to be concerned with whether she would be "good" at the work she had chosen and prepared for.

These seniors were eager to graduate. They were literally counting the days that still separated them from their degrees. But, the interview analysis revealed differences between the traditional-age senior and the older senior with respect to what graduation would bring.

The older senior could not wait to graduate, could not wait to get on with her life. Typically, the commitment to obtaining an Alverno degree had required significant life readjustments for the older student. She had made many tradeoffs in terms of her resources. She has stretched and diverted her money, her time and her energy from a family or full-time job (and often both) to the cause of obtaining a college education. The following traditional-age student astutely expresses her awareness that the career goals of the older woman are different from her own:

Sarah Jo (names are fictitious)

> Some of these women are 35 years old. They've spent half of their life raising a family, had a couple of jobs and they say, "This is what I want to do" and "This is how I am going to do it." I think that makes a lot of difference. There was no doubt in their minds what they were coming here for, how long it is going to take them, and what they are going to accomplish. Whereas, half the kids that come from high school say,--"Oh, yeah. I want to be a nurse." "I want to be a teacher."

Marjorie, who entered college nine years after high school, entered Alverno "with the idea of using it as a tool to a goal." She realized that "without some very specific ideas on where I wanted to go in the business world, I wouldn't get there." She had a position in first-line supervision in a machine shop waiting for her after graduation. She was excited about the challenge of "making it" in a traditionally male-dominated industry. She saw herself as a "comer," a woman who people were going to have to consider for what she had to offer. Near graduation Marjorie said:

> I'm asking myself, when will I be out of the training program and have a department of my own? Is it realistic for me to expect a promotion in two years' time?

Typical of the older seniors, Marjorie was already thinking in terms of career development and advancement. For the older woman, getting the Alverno degree was an important milestone along the way to a rather specific future. Getting that first job is a first step in a future career involving many steps.

The traditional-age senior, who was 22 years old in 1978 was approaching graduation quite differently. Graduation seemed to signify more about her past then her future. She seemed to be looking forward to the liberating experience that graduation from college brings. The traditional-age senior often expressed a sense of being tired, while this is not typical of the older woman. She is tired of "having to do this and that." She wants to get out on her own. She eagerly anticipates graduation as a milestone marking the end of formal education, rather than as a milestone in career development. This is not to say that having a career or a job is unimportant. It certainly is. But, in many cases, the primary importance of the first job lies in how it represents adulthood.

Lindsey comments, "What can I do once I get that job? What kinds of new things will that give me--be it a car, some clothes, travel or whatever?" Blair says, "My goal is this. I want to be economically able to do the things I want to do outside of my career."

As a two year alumna, Lindsey reflected back on what it was like to be graduating from college.

> I guess my prime goal when I graduated was to find a job and prove that I could be a successful teacher. I could teach properly, get the information across, and somehow affect these students. When you first get out, I think you're really testing <u>yourself</u> more than you're dedicated to being a teacher.

Even though the traditional-age seniors have definite career goals, they are usually not seeing beyond the first job. There are probably several reasons why. First, the pent-up needs of early adulthood are temporarily consuming a disportionate amount of energy and attention. Secondly, the traditional-age senior conceives of time quite differently than her older colleague. For a 22 year old, even one coming out of a college program that emphasizes conscious career planning, a six month plan might be perceived as a "long-term plan." It was an exception for a traditional-age senior to be projecting more than one or two years into the future.

Two years after college, the differences related to age at graduation were no longer so apparent. Whatever differences there might be were overshadowed by the experience of having discovered that one has "grown out" of one's first job. This realization came as a shock to the traditional-age graduate who had entered the job market with little thought beyond the first job. But the older alumna was also shocked, even though as a senior, she was already upwardly mobile within a career, and had hoped and expected to be moving out and up from her first position. Analysis of the questionnaire data in the cross-sectional study revealed that 1980 seniors had higher expectations than 1978 graduates

had been able to realize. This longitudinal analysis of interviews helps explain this finding. Quite simply, alumnae have different expectations than they had as seniors--initial goals have shifted. The first job may have been perceived as quite adequate initially, but, once that job is mastered, the alumna begins exploring new paths. After two years, she is usually interested in either an upward or lateral change within her career field. Several of the alumnae were considering a career change. If she had any insecurities, as a senior, about being able to get a job or being able to do "a good job," as a senior, these concerns have been resolved. The typical two-year alumna is more concerned about having a good job than doing a good job. She has developed confidence in her own abilities; she knows she is capable of doing a "good job." Marjorie states that, "I started raising my goals higher and higher because I found that I could do a lot of things I had never tried before." The alumna is now asking questions about her job rather than herself. How is her present work related to the future? Andrea claims, "I don't feel that there is much opportunity for expansion where I'm at. I feel I've reached a point where I'm not going to be able to go up."

The typical alumna just didn't expect to be considering major career decisions so soon after college.

Andrea

> I did not think that I would be planning on changing my career this quickly or doing something else with my career within three years. I did not think that I would be very seriously considering going on for my masters at this point. As a senior, I viewed that more as something I'd be doing in 10 years or 15 years rather than in three.

In most cases, the typical alumna had devoted several years of her life to exploring various careers and vocations, to "trying on different hats," looking for and finally finding the right fit. She had made an investment in college to prepare for a certain career. When she had made the commitment to, for example, nursing as an undergraduate, everything else had fallen into place. "I will have to take these courses. I will get this degree. With this degree I will be able to get this type of job." There were very few other decisions, beyond the initial career choice, to be made during the college years. But, unlike choosing a college major, she found that choosing a career is not something one only does once. Many alumnae learn soon after college that having a career requires many decisions beyond the initial commitment. The typical two-year alumna has found that "having a career" means only that one has a general direction.

The career goals and decision-making of the two-year alumna are very different from that of the graduating senior. One could say that the graduating senior has a clearer career orientation than the two-year alumna. The senior knows pretty clearly what she wants to be; the two-year alumna is likely to be wrestling with questions such as, "Why am I doing this?," "What else can I do?"

Blair

> I guess I'm in a kind of reassessment period right now trying to see if what I think I am is really what I am. Because when you are

> in college, you have a pretty good idea about what you think you want to do. When you get out there and you're doing it, if you don't like what you're doing, then you've got to start scrambling for something else.

The interview analysis has enabled a fuller understanding of the nature of career goals and how they serve to provide direction for life decisions. Goals, when they are initially conceived, provide direct guidance. If a student has decided she wants to be a nurse, she knows what the immediate steps are, and these steps are quite different than those for becoming a manager. However, ever so gradually, a goal becomes a point of departure rather than a point of arrival. As with the two-year alumna, although the process might have been gradual, the realization of goal achievement came as a shock. For example, the recent graduate realizes that she is a nurse, she has achieved her goal. But any sense of the achievement she feels is fleeting. She feels like she's right back at the beginning of the process of career definition.

Earlier decisions and choices have served to delimit the range of possible futures. However, achievement of the initial goal of being a nurse has not defined the range of possible futures within nursing. Does she want to go into nursing administration? Training of nurses? Does she want a future in rehabilitation? Surgery?

> Sarah Jo
>
> I am still always going through this process of questioning myself. "Am I still headed in the direction that I want to be headed in? Am I solving this problem to its best end?" All the time it is happening, I'm always questioning my activities, goals and direction.

Although most new graduates assume that the first job will provide the answer to the question "What am I going to be?," they realize rather quickly that the first position presents very fundamental career questions.

Typically, the first position after college enables the two-year alumna to see a range of opportunities that were beyond her comprehension when she was a college senior. Two years after college Marjorie claims that she never imagined, as a college senior, that she might be headed for a position in marketing.

> I spent about 2 1/2 weeks in [city] at the International Machine Tool Builders Show. It opened my eyes to the manufacturing division of our company. And I started thinking, "Gee, if I could get all of this fundamental background on machining, I could go into marketing. I would have all this hands-on-experience that would relate to marketing our equipment to potential customers. That had a big impact on me. It set my sights for something beyond what I was doing.

The interview analysis strongly suggests that career goals are best viewed as developmental and emergent rather than static.

Andrea

> I'm constantly setting new goals for myself. So every time I'm near to a goal, I have another one. I never come real close to it, because I'm constantly making another one to go with it, finding something more to achieve.

Although there is a powerful social press for college students and graduates to be able to articulate consistent career objectives and goals, for these alumnae, every new experience has the potential of opening up or illuminating a new future.

Alumnae Abilities Used on the Job

The analysis of alumnae interview data considerably broadened our understanding of abilities used and how abilities are linked to self-confidence and job satisfaction. Alumnae used two major categories of complex abilities that were equally important in structuring their performance at work and in managing their work role and careers: intellectual abilities and interpersonal abilities.

Intellectual Abilities. The first major category of abilities identified in the alumnae interviews were reasoning abilities. Both younger and older women, across all professional groups, cited intellectual abilities--using such terms as "analysis," "problem solving," "decision-making," "planning" and "organizational abilities"--as important to their career performance. The following are some alumnae examples of using intellectual abilities.

Clarice

> When I think about how I learn now I realize that the first thing I always do is observe a given situation or problem. Then I try and say, "What is the whole and what are the parts, what's the relationship." Then I say to myself, "What do I need to do about it." So then I start in my problem solving steps. It is more and more becoming a permanent thinking mode for me. I know what the concepts are. I understand them. I know how to apply them. If your plan of action does not give you the end result, you can say to yourself, "I tried, I tested it and it didn't work. I will now see if I can try something else." It moves you along, you're not stuck at dead center. There is something very freeing about being able to think like this.

Megan

> The thing about my job is that it's never the same. Another skill I probably should have mentioned, along with communicating, is analysis because you do work very independently. You have to take the specific individual cases, look at them, determine what is needed, what needs to be done, get financial statements or whatever from taxpayers, analyze them and try to determine a course of action. . . . So that in itself I guess is a learning experience because every case is different and you do have to use these skills over and over.

April

That year in my classroom, there was something major that went on every week. If it wasn't a problem with things missing, it was a problem with parents. I would come home at the end of each day or week and write down all the things that happened--just the bare facts. This is what happened, this is what I said, this is what they said. Then I would reread it and look at it and analyze what the real problem was--why things didn't go the way they should have or the way I would like them to. I would think about what I would do if a particular situation would come up next, and then I took action on it.

Interpersonal Abilities. Alumnae also consistently emphasized interpersonal abilities learned in college as critical to effective work performance. The following are some alumnae examples of using interpersonal abilities.

Rebecca

In interpersonal situations, in college and different sociology courses and the interpersonal skills classes and communications, you were given situations and always had time to read the materials for that particular course meeting. You had time to think of how you were going to handle a situation before you went in and conversed with your counterpart. You had anticipations of the outcome and those situations based on the knowledge that you had and the knowledge that your fellow classmates had. It's more immediate at work.

. . . During this last transition I was being tested. I must say, I had never ever experienced anything quite like this before. There was just this whole trial period of seeing how far the people on the floor could push me, the hourly production workers and the supervisors. Because we're monitoring production . . . we have authority and responsibility. However, if a production person doesn't want to take care of a problem, they don't do it. This is where this whole business of the interpersonal comes in. I remember one day where I held some pallets and the crew superintendent came up and he started screaming at me. He said, "Why are you holding these pallets, what is with you, there's nothing wrong with this." This big harangue must have taken 15 minutes. He took my ticket I had written up and ripped it up in front of me. Power play, right? Well how do you deal with something like that? So I said something like, "Well, I hope you intend to rewrite those hold tickets." After this whole harangue he did rewrite those tickets. Later he said, "I have to congratulate you on how you handled yourself," because I remained cool, I didn't lost my temper, I remained reasonable. He said, "The last person I did that to, a woman of course, started to cry." He's constantly doing these things to find out how I'm going to respond under pressure.

Celeste

> Social interaction, communication--not just standing behind and watching but opening your mouth when you have questions--those are abilities I use, definitely. At first I was afraid to ask doctors questions because I thought my questions were dumb, but I don't feel that anymore. If I have a question or if they wrote something I don't agree with, I'll speak up. I guess social interaction is the main thing, your communication skills primarily because you're more successful with your decision-making. I've been around too many nurses who don't open their mouths and I've seen the results of that, and people that speak up too much and the problems they've had.

Reasoning and interpersonal abilities are complex sets of interrelated skills that were often integrated and overlapping in practical role performance. Abilities are refined depending on their specific application. They are also combined in various ways given situational demands, and they are adapted to fit a particular action plan. Alumnae spoke again and again of combining ("trying to take everything and put it together in a workable process") and modifying their abilities ("I should not have come on so directly in getting him to try out this new equipment. I needed to show him how we can get the work coordinated and out faster first"). Using abilities led to self-confidence on the job and was the basis for job satisfaction. Being able to perform abilities led to staying on the job.

Self-Sustained Learning at Work

Another important indicator of self-confidence and job satisfaction was the degree to which alumnae experienced continued learning, an intrinsic value which motivates not only career development and job choice, but also determines whether an alumna continues to develop and adapt her abilities.

Recall that 41% of alumnae reported additional schooling, but all 92% of the working alumnae reported new learning at work. As we analyzed the alumnae interviews, a picture of ability-based learning began to emerge as it was practiced at work. Several components of this "learning to learn," or self-directed learning characterized alumnae behavior.

Experiencing learning as a continuous process. While they are highly successful in achieving their immediate career goals, alumnae continue to regard learning as a major value and an important part of their lives after college. The work setting makes major demands and provides opportunities for continued learning, an important part of developing competence in the job role. At the same time, they describe learning as an intrinsically rewarding activity which motivates career development, including job choice.

As educators, we hope graduates do continue to have significant learning experiences after college. Abilities learned in college are an important stepping stone to effective performance ("What I learned most from Alverno and what's helping me most in my learning now is the whole process of learning, of starting and building on what you know, taking it from there."). Learning experiences are recognized and sought because "There's always a different

situation that might come up." Another graduate comments that, "Alverno taught me that I like to learn and that I am capable of learning."

Graduates consistently speak of the importance of learning as "part of life," "part of my job" or "part of the person I am." An older graduate in management talks of her career plans in her current setting and adds, "If the learning starts tapering off I would consider going to another company, because I cannot be stagnant in learning." A young nurse affirms, "To me, living is learning." The following examples show that alumnae experience learning as a continuous process in more detail.

Lucy

> I'm still learning what to use and I'm trying new things ever year to see what's going to work. I don't think I'll ever stop learning. If the year comes where I say this is how I'm going to teach for the rest of my life I think I'll quit for awhile because you just can't stop somewhere.

Roxanne

> You know it's a big part of what I do. Because in the job that I have, when I started it, everything was new to me. I had to learn blueprint reading. I had to learn machine operations. I had to learn what it was like to work with people, blue collar workers. I learned a lot since then and I am still learning. I don't think anybody ever stops learning.

Gwen

> I like learning new things so I think it will always be a part of what I do. There isn't going to be a time when I don't put myself in a place to learn something. I get very bored fast if I am not learning something . . . and two years from now if they don't move me out of this job I won't stay because I don't think that I will expand anymore than two years in this job. The learning . . . will will start tapering off. . . .I would consider going to another company because I cannot be stagnant in learning.

Hope

> I am going to learn as much as I can in the place I am now. I will absorb everything that comes my way. In fact I drive people nuts asking questions sometimes. They thought I was really crazy when I first got there because I took the computer manual and read through the whole manual, nobody ever read the thing. It is just part of my curiosity. I once spent days paging through this thing to learn all this stuff, and I took it home with me. They thought that was really strange. There is going to be a point where I can't learn much more there. If it comes to that . . . I will consider, going into something else for the learning process sake.

Alumnae also seek more formal learning. In assessing commitment to more formal learning by alumnae, 41% did complete additional education, and of the

59% who did not, the majority expressed plans to acquire additional formal education at a future date, showing a high commitment to continued learning.

Linking knowledge, theory and experience to productive action. Alumnae describe putting these elements together in new situations. One alumna comments that, "When you're faced with a situation all of a sudden you start bringing out all that you were taught, trying to take every bit of education, suggestions from your supervising teachers, and put it together." Another says, "I have been gradually learning how to use my small group theories and relate them to the strategies others use. I've learned how to pick up on signals and back off a little bit and develop another round about route."

Applying abilities in action, getting a response, and adjusting one's performance or ideas accordingly. An important element of learning to learn is adjusting performance to feedback. "I had to spend a great deal of time observing, thinking, retrenching, that sort of thing," says one alumna. Another admits, "When I come across a fresh situation I feel I need more information so that I respond differently, I remember what I read, I sit back and analyze what happened, what I think should happen." The next examples show both these elements.

Lorraine

> When I come across a fresh situation or something I am uncomfortable with, I feel I need more information on that so I respond or behave differently, more in accordance with how I think I should respond or behave the next time, I sit back and analyze what happened, what I thought should happen. Maybe I remember something I read somewhere and I try to go back to that. I think the learning is only different in the situations you find yourself in. When you are in school the learning is, I would say, at a more leisurely pace. You have time to try things out with very little risk. When you are out in the work force learning, the risk becomes much greater and you find yourself trying to speed through some of the learning because you know that you need to do that in order to continue functioning at a high level.

Julia

> I have been gradually learning how to use my small group theories and relate them to the strategies that others use . . . I think I'm making strides because I know when I have established rapport with the department head and when I can accomplish something with him. I've learned how to back off a little bit. I've learned how to pick up on those signals and to back off a little bit and wait awhile and maybe develop another round-about route. For example, right now I have one department head who is intimidated by this new equipment insofar as he sees his personal secretary not having control of his work. When I attempted to get her trained in this program I got a flat no. I shouldn't have come on so directly and said I want her to learn to operate this equipment. Rather, what I needed to do was apply a particular project . . . and show to him how we can get this done very rapidly and he will get it much sooner than before. Where he's had a problem in getting the work coordinated and out, if I could show him that with this new

equipment we can eliminate that, I'll have him on my team. So I had to spend a great deal of time observing, thinking, retrenching, that sort of thing.

Integrating and adapting abilities. Alumnae meld and refine abilities based on this experience of "observing, thinking, retrenching." Abilities are often integrated and overlapping in practical role performance. These abilities range from simply becoming familiar with a new environment and new tasks ("Learning is a big part of what I do because when I started this job everything was new to me") to becoming an active learner in trying to carry out the role effectively, seeking information from others and the situation ("I'm still learning what to use and I'm trying new things every year to see what's going to work").

Ideals for performance and accomplishment must be modified in the work setting. Because of the environmental press, abilities learned in college must be adapted ("I learned you have to introduce changes very slowly and gradually and to teach about the change before it happens."). New attitudes, beliefs, perspectives and elements of self-concept or professional identity are acquired as well ("My ability to compromise and be more tolerant and open-minded has increased."). A young nurse, who has already made a job change, summarizes the processes of adapting abilities to new environments ("You have to think more in terms of 'How do I do this in this situation?' You are more consciously involved in what you are doing.").

Thinking and performing in context. Central to learning to learn is not the simplistic use of abilities as they have been first practiced, but rather a sensitivity to their discretionary use, depending on the constraints and challenges of a particular work setting or event. Alumnae see their actions in relation to their reading of the situation, and the consequences likely to occur. Both the integration and adaptation of abilities, and thinking and performing in context are illustrated next.

Lee

There were many different things that we were taught, suggestions that were given you from your supervising teachers . . . when you're in a situation and faced with it all of a sudden you start bringing these things out. I went back to many of my classes and tried to think, "How can I apply this to this?" Trying to take every bit of education that I had, not trying to put anything in the background and saying it's not important but trying to take everything and put it together in a workable process.

Sue Ann

When you break from one job to another, you are dealing with a new set of people. You don't know them so I think you are a little more aware of your interaction skills, how you present yourself to people and how your interaction is going to affect your work relationships. I think you are more aware of problem solving skills. You are in a totally new environment so you have to think more in terms of how do I do this in this situation, how is it different from what I have been doing, and what priorities are important here as compared to where I was. I think you are a

little more consciously involved in what you are doing whereas maybe when you become more familiar with it, things are a lot more subconscious. All in all, you have to put things together in this new setting.

In sum, interview analyses of learning at work identified several components of self-sustained learning:

- Learning is a continuous process; alumnae regard learning opportunities as motivating career development and job choice.
- Learning to learn for alumnae means to tie knowledge, theory and experience to productive action. Alumnae describe putting these elements together in new situations.
- Alumnae apply abilities in action, get a response and adjust performance or ideas accordingly.
- Alumnae show integration and adaptation of abilities based on the experience of "observing, thinking, retrenching."
- Central to self-sustained learning, or learning to learn, is thinking and performing in context.

What are the consequences of organizing learning in terms of abilities? Although alumnae use abilities taught in the Alverno curriculum, they also use abilities to create a theory of action that gets tested out in various work situations. This is in sharp contrast to the view that technical knowledge alone is the basis for effective performance. Alumnae do say they learn new technical skills, but they do not emphasize this knowledge when they describe how they go about deciding what to do ("My job is never the same . . . I use communication and analysis because you work very independently . . . you have to analyze the financial statements from taxpayers and determine a course of action").

College learning and abilities form a foundation for role performance after college, but learning to learn is a prerequisite to adapting abilities in the role one has. Thus, self-sustained learning is a process that enables adaptability to multiple settings; it links ability-based learning and work after college.

SUMMARY

Alumnae Confirm the Value of College

Seniors had higher career expectations than two year alumnae were able to realize after two years, but the more experienced alumnae felt better prepared by their education than seniors did when they graduated. But more striking than this or any other difference, was the overall similarity of alumnae and senior perceptions of their achievements and their college preparation. Both alumnae and seniors felt good about their achievements, and the value of college in preparing them to meet their goals. What seniors expected, alumnae experienced. Alumnae see college preparation in direct relationship to achieving goals for learning to learn, and performing intellectual and interpersonal abilities. They also felt college prepared them to understand their academic field. Alumnae seem less likely to feel certain about economic and career advancement, in contrast to other outcomes. Apparently, the transition from college to career is not complete two years after graduation.

Career Goals Develop With Experience

Career goals do provide direction for decision-making after college. These alumnae, when they were seniors, reported that career goals provide direct guidance in making decisions about where to go to college and what to choose as a major area of study. As alumnae, they soon discover that they have "grown out" of their first positions within two years after graduating. Although the typical new graduate assumes that the first position will answer the question "What am I going to be?," she soon realizes that the first career goal has become a point of departure rather than a point of arrival. Once secure within the first position, the alumna begins to see a range of career opportunities that were beyond her comprehension as a college student. This suggests that faculty help students identify the strong cultural values for lock step career development, and present these values in tandem with the idea that career goals can only reflect and develop from any one person's experience. Every new experience has the potential for opening up possible futures never before considered.

Abilities Learned in College Are Used By Alumnae

There is a remarkable congruence between the abilities graduates say they use in the work place and those Alverno educators consider important outcomes of college. Intellectual and interpersonal abilities are both mentioned as necessary for coping successfully with a range of situations. And abilities function as an organizing principle for role performance and careering.

The outcomes of college transfer to post-college settings. Abilities identified as crucial to effective performance, like reasoning abilities, on the face of it, are similar to those identified by educators. In contrast, interpersonal abilities, long an expected result from informal learning alone, are critical to effective performance as evidenced in the observations of working alumnae. This validates the Alverno faculty's choice of abilities like valuing and social interaction as similar in importance to intellectual abilities. The finding also suggests that all highly complex cognitive abilities be integrated with high level interactive ones. Clusters of abilities carry forward from college to the world of work. While they must be integrated and adapted to the work place, they contribute to effective performance.

Alumnae Are Self-Sustained Learners

That the value for learning is internalized is shown not only because career satisfaction is built partly on opportunities for new learning but also because graduates go on to more schooling. Alverno students come to college for job preparation. From their point of view, the college prepares them adequately, and they are almost all successful in finding the job they want after graduation. Over 40% of the alumnae we studied have continued formal learning two years past college, and another 50% expect to do so in the future.

Learning to learn means discovering how to derive from an environment and experience what one needs to know to adapt one's abilities. Our results strongly suggest that using these skills and the consequent adaptation of abilities is such an important process for the graduate that college learning

needs to specifically train for it. While college graduates will always face disillusionment and the conflict between realizing their ideals and making a living, how they deal with the challenge seems an important component to making the transition from college to work. Student values for learning to learn are realized in alumna motivation to use and adapt abilities to a range of contexts. Alumnae test out new ways of doing things to find out what will work. Learning how to adapt abilities involves a process of applying judgment and abilities in action, getting feedback and adjusting accordingly.

CONCLUSIONS

Both Pace (1979) and Astin (1977) have argued that in-depth, institutional studies are an essential part of measuring college outcomes. The results presented here are drawn from a study of this kind, and shed light on the kinds of abilities, learning processes, and career decision-making colleges can expect to measure in alumnae. Several of the findings have implications for institutions studying their outcomes, and college faculties seeking to improve curricula. First, students and alumnae were willing to be involved in in-depth interviews, which yielded new information about abilities and learning processes that alumnae use on the job, and confirm the complex learning that takes place after college. These descriptions can be used to generate variables for future alumnae follow-ups in Alverno's longitudinal studies, improve alumnae measures, and can serve as a framework for comparative studies that clearly need to follow this initial study.

Many colleges claim to develop lifelong learning skills. Educators can use the descriptions of learning on-the-job to review their own programs for developing active, self-directed learning. This study gives some credence to the belief that colleges can measure such skills after college and use the results as a stimulus for curricular improvement. Descriptions of post-college learning and abilities gleaned from this study break open the attitudes and evaluations studied through questionnaire data. These kind of descriptions enable us to go beyond proving that college works for alumnae, to descriptions of how college actually makes a difference for them. Perhaps these results can be used by faculty to persuade beginning students intent on a career that liberal learning abilities and values for independent, self-sustained learning are important prerequisites for the world of work. Abstract knowledge learned separate from using it, and technical skills alone, are not enough for making the grade after college.

We end these conclusions on a cautionary note. Although we have observed the use of abilities, learning, and career decision-making after college in some detail, this study is primarily descriptive and based on interviews. At this point in time, these conclusions are more properly called assumptions. All of them need further research to clarify the constructs and test them with more stringent, direct observational and behavioral methods. Whether institutions of higher education can afford to make such commitments is an open question. We think these results give us a glimpse of the compensations.

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Table 1

Comparison of Graduating Students and Two-Year Alumnae Responses on Career Expectations and Realizations

	1978 Graduating Students as Two-Year Alumnae (n = 56)		Entering 1976 Weekday Students in 1980 (n = 63)			
	M	SD	M	SD	t	df
Alverno Preparation for First Position [2]	2.13	0.86	2.19	0.95	-0.33	113
Work Consistent with Abilities [3]	1.57	0.67	1.24	0.50	2.96[1] **	95
Potential for Advancement to Higher or Better Position [2]	2.33	0.99	1.57	0.73	4.56[1] ***	90
Potential for Advancment in Chosen Career [2]	2.17	0.90	1.68	0.71	3.26***	113
Satisfaction with First Position [2]	1.88	0.80	1.54	0.56	2.55[1] *	85
Advantage as Alverno Graduate of Finding the Position You Want [2]	1.86	0.47	2.43	0.82	-4.54[1] ***	101

[1] t-test with separate variance estimate used.
[2] scale = 1 (high) to 4 (low).
[3] scale = 1 (very consistent) to 3 (inconsistent).
*p < .05
**p < .01
***p < .001

Table 2

Comparison of Graduating Students and Two-Year Alumnae Responses on Aspects of Their Educational Experience at Alverno

	1978 Graduating Students as Two-Year Alumnae (n = 56)		Entering 1976 Weekday Students in 1980 (n = 63)			
	M	SD	M	SD	t	df
Motivational Investment While Attending Alverno[1]	1.40	0.57	1.40	0.55	0.03	111
Personal Learning Effort While Attending Alverno[1]	1.47	0.58	1.44	0.53	0.25	112
Rating of:[2]						
Faculty Excellence	3.59	0.67	3.20	0.92	2.57[4]*	106
Field Experience	3.76	1.02	3.67	1.05	0.47	108
Contact with Faculty	4.12	0.86	3.74	1.09	2.07[4]*	108
Contact with Professionals in Field	3.34	0.85	3.69	0.95	-2.04*	107
Classroom Teaching	3.40	0.90	2.89	1.08	2.60*	105
Attitude Toward Alverno	3.65	0.98	3.34	0.94	1.65	105
Career Advising	3.14	0.98	2.34	1.13	3.86***	103
Assessment	3.44	0.86	2.90	0.99	3.01**	107
Rating of Alverno Compared to Some Other College[3]	6.65	2.06	6.30	2.11	0.66	65

[1] scale = 1 (High) to 3 (Low)
[2] scale = 5 (Excellent) to 1 (Poor)
[3] scale = 10 (High) to 1 (Low)
[4] t-test with separate variance estimates used

*p < .05
**p < .01
***p < .001

APPENDIX A

Item Subgroups For Creation of Indexes
(Alumnae Careering Questionnaire)

Civic and Cultural Participation

To be responsive to world issues or pressing social problems.
To learn how to use my leisure time more effectively.
To increase my participation in cultural events.
To participate more effectively as a citizen.
To develop a better appreciation and responsiveness to music, art and literature.
To develop my spiritual life.
To increase my active participation in community issues and activities.
To enrich my life and make me a more well-rounded person.

Economic and Career Advancement

To increase my chances for promotion in my job.
To discover my career interests.
To obtain a degree.
To formulate long-term career plans or goals.
To complete courses necessary to get into a graduate program elsewhere.
To improve my chances for a better economic future.
To prepare for a particular career by learning specific skills and abilities.
To achieve economic independence.

Interpersonal Abilities

To write, speak and listen more effectively to various audiences.
To improve my leadership skills.
To improve my sensitivity to the feelings and perceptions of others.
To become actively involved in a satisfying social life.
To develop my ability to interact effectively in social situations.
To develop myself personally.
To improve my ability to get along well with others.
To meet people and make new friends.
To prepare for a more satisfactory family or marital life.
To increase my self-confidence.

Learning to Learn/Intellectual Abilities

To think and analyze effectively.
To choose effectively between alternative courses of action in various situations.
To be more effective in relationships between myself and the total environment.
To be self-directed in my learning.
To assess my strengths and weaknesses.
To develop my abilities to be independent or self-reliant.
To develop my skills in Alverno's competences (e.g., social interaction, etc.)
To gain a better understanding of my own and others' values, and to decide and act on them.
To increase my awareness and understanding of different philosophies, cultures, and ways of life.
To learn how to learn.